Massachusetts Department of Environmental Protection
Source Water Assessment Program (SWAP) Report
For
Washington Acres

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared:
October 20, 2003

Table 1: Public Water System (PWS) Information

PWS Name	**Washington Acres**
PWS Address	**N. Washington Road**
City/Town	**Belchertown, Massachusetts**
PWS ID Number	**1024015**
Local Contact	**Mr. George Adams**
Phone Number	**508-385-4430**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1024015-01G	163	459	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Washington Acres is a small rural, residential apartment complex that serves 12 homes in southeastern section of Belchertown with a community of approximately 30 people. Although municipal water and sewer serve parts of Belchertown, the systems do not extend to this part of town. The community utilizes on-site septic disposal systems and maintains one water supply well #1. The well is located in the front of the parcel and has a 6-inch casing of unknown depth.

The Zone I is the protected area immediately surrounding the wellhead while the IWPA provides an interim protection area for a water supply well when the actual recharge area (Zone II) has not been delineated. The actual recharge area to the well may be

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

significantly larger or smaller than the IWPA. Little is known about the well as there are no records currently available. The well casing had previously been below grade in a well tile but was recently raised above grade to protect against inundation of the casing by stormwater. There is no yield data for the well and the source has only recently had a meter installed to determine actual usage. The Zone I and Interim Wellhead Protection Area (IWPA) radii for the apartment's well are 163 feet and 469 feet, respectively based on an estimated use from Title 5 flows

The surficial deposits in the immediate area of the apartments are mapped as thin (<50 feet) stratified drift deposits with some higher areas of till or bedrock covered with a thin layer of till. The bedrock is mapped as intrusive rocks of the Belchertown complex, predominantly quartz diorite and monzodiorite. Based on the geologic maps of the area, the well is assumed to be drawing from the bedrock aquifer. The well is located in an area of thin unconfined sand and gravel deposits where there is no record of a confining, protective clay layer in the vicinity of the well. Wells located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

The well serving the facility has no treatment at this time. For current information on water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Please refer to the attached map of the Zone I and IWPA and Table 1 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

There are several activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Zone I ownership,**
2. **Transportation corridor including railroad,**
3. **Residential homes**

The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of several moderate threat land uses or activities in the Zone I and IWPA, as seen in Table 2.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Transportation corridors/railroad	Yes	Yes	Moderate	Monitor drainage to ensure storm water flows away from the well
Residential homes w/parking	Yes	Yes	Moderate	Lawn chemicals and household hazardous materials, including petroleum products
Septic systems	Yes	Yes	Moderate	Microbial threat and improper disposal of hazardous materials

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

1. Non-conforming Zone I – Currently, the water supplier does not own or control the entire Zone I area. Systems that do not meet DEP Zone I requirements for ownership or control must get DEP approval and address Zone I ownership prior to increasing water use or modifying systems. The Zone I area includes two of the apartment buildings, one private residence, part of the road and the septic system for one of the buildings. Each building has two septic tanks, a drywell for the laundry and a leachfield for the septic system. The parking areas are paved with curbs and no drains. The curb next to the well protects the well from parking lot and street runoff. The apartments are heated with electricity and there is one pole-mounted transformer on the edge of the Zone I across the street.

Recommendations:

- Continue to control access to the wellhead area and make every effort to acquire Zone I control or ownership.
- Inform residents regarding the use of BMPs for household hazardous waste management and make available the opportunity for proper disposal of those materials for the tenants.

2. Residential Land Uses – The Zone I and IWPA have high-density residential land use. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Although the apartments are heated by electricity, neighboring homes may use a variety of fuels. Common potential sources of contamination include:

- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store and accidents during delivery.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents. Visit the Nonpoint Source pollution web site for additional information at http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

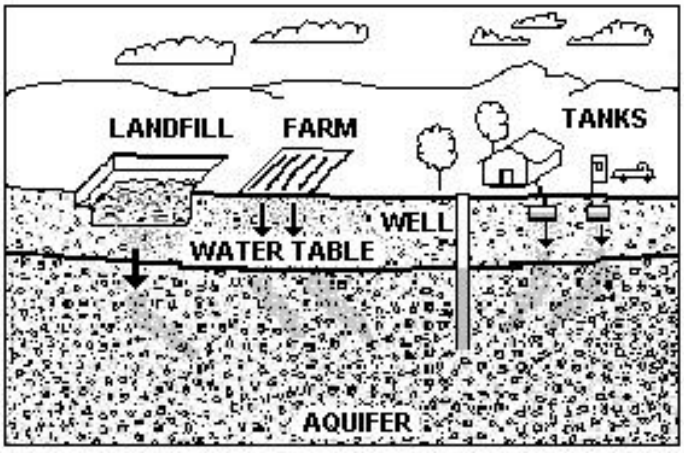

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Residential Land Use Recommendations:

- Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

3. Transportation corridor including railroad – The well is located less than 25 feet from the road and the railroad track is within the IWPA. Accidents and normal use and maintenance of roads and railroads pose a potential threat to water quality. As flowing stormwater travels, it picks up de-icing materials, petroleum chemicals and other debris on roads and contaminants from streets and lawns. Common potential contaminants in stormwater originate from automotive leaks, automobile maintenance and car washing, accidental spills as well as waste from wildlife and pets. Railroad right-of-ways may pose a potential threat from accidents and maintenance practices. Because the railroad is on the edge of the IWPA, the

For More Information:

Contact Catherine Skiba in DEP's Western Region Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier, town boards, and the local media.

threat associated with that activity was reduced from high to a moderate threat.

Recommendations:

- Monitor the area to ensure that runoff during heavy storms does not threaten the well. If it is determined that runoff backs-up toward the well, consider modifying the ground surface around the well casing to ensure that stormwater does not discharge near the well.
- Prepare an Emergency Response Plan that includes coordination among the DEP, you (the water supplier), and the Town emergency response (ER) team in the event of an accident near the wellhead. The Town ER team should be made aware of the location of your water system so that they can notify you in the event of an accident near your system.
- Request that the Selectmen or Conservation Commission, review the Yearly Operating Plan for the railroad to ensure that the railroad is aware of location of your systems' IWPA.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. You are commended for current protection measures such as paving the parking area and installing curbs to protect the well casing and for extending the well casing above ground. Please review and adopt the key recommendations above and the following:

Priority Recommendations:

- Continue to maintain septic systems and monitor activities around the well casing.

Zone I:

- Prohibit any new, non-water supply activities within Zone I.
- As is practical, relocate or control activities that are within the Zone I that are not specific to the supplying of water.
- Consider well relocation if Zone I threats cannot be mitigated and water quality becomes impaired.
- Periodically inspect the well casing to ensure the cap is water tight and secure.
- Conduct regular inspections of the Zone I. Look for illegal dumping and evidence of vandalism; check parking areas for leaks, etc
- Continue to maintain road and parking lot drainage in the Zone I away from well.
- Do not use or store pesticides, fertilizers or road deicing material within the portions of the Zone I that are within your control.

Facilities Management:

- Septic system components should be located, inspected, and maintained on a regular basis.
- Concrete or earthen pads or collars around the well casing should slope away from well to prevent ponding of water at the casing.

Planning:

- Work with local officials in town to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:
The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". If funding is available, each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described on the DEP website http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf - "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation".

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet